

Message

From: Partridge, Charles [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=27DA56DA9A12472787EF56077099CF36-PARTRIDGE, CHARLES]
Sent: 12/9/2019 6:06:57 PM
To: Elgethun, Kai (ATSDR/DCHI/WB) [irz6@cdc.gov]; zdg1@cdc.gov
CC: Wendel, Arthur (ATSDR/DCHI/WB) [dvq6@cdc.gov]; Garrett, Connie [Connie.Garrett@mt.gov]; Wall, Dan [wall.dan@epa.gov]; Wendy OBrien [OBrien.Wendy@epa.gov]
Subject: RE: Manganese, Zinc and Copper and their impact on Human Health in Butte. New Information Reported in today's Montana Standard

Yes, I understand that it was for internal concurrence only. There will be not statement from me attributing anything to ATSDR. That being said, if we could get an official statement from you guys, it would be great. But not sure how long that would take.

cp

From: Elgethun, Kai (ATSDR/DCHI/WB) <irz6@cdc.gov>
Sent: Monday, December 9, 2019 9:50 AM
To: zdg1@cdc.gov
Cc: Wendel, Arthur (ATSDR/DCHI/WB) <dvq6@cdc.gov>; Partridge, Charles <Partridge.Charles@epa.gov>; Garrett, Connie <Connie.Garrett@mt.gov>
Subject: Re: Manganese, Zinc and Copper and their impact on Human Health in Butte. New Information Reported in today's Montana Standard

Charlie,

If Scott has covered your request then I am fine with his reply. To be clear, R8 ATSDR is not making any public determination on possible errors at this time. This reply is for preliminary internal concurrence. As I said in my last email, any further public/media statement will require some time and engagement from our HQ.

Thank you,

KAI

From: Sudweeks, Scott D. (ATSDR/DCHI/WB) <zdg1@cdc.gov>
Sent: Monday, December 9, 2019 9:16:21 AM
To: Elgethun, Kai (ATSDR/DCHI/WB) <irz6@cdc.gov>
Cc: Wendel, Arthur (ATSDR/DCHI/WB) <dvq6@cdc.gov>; Partridge, Charles <Partridge.Charles@epa.gov>; Garrett, Connie <Connie.Garrett@mt.gov>
Subject: Re: Manganese, Zinc and Copper and their impact on Human Health in Butte. New Information Reported in today's Montana Standard

Hi Charlie,

Kai is out today. You asked for feedback on the McDermott paper and the slides Lynn provided.

I've reviewed the McDermott paper and additional references and agree with Kai, Arthur and Lynn's assertions that there seems to be a units conversion error in the paper. Additionally, the reported concentration ranges in Butte are consistent with the MIREC study and the Haram Mourabet 2013 data suggesting there does not appear to be an unusual concentration of metals in meconium as reported by McDermott.

I concur with recommendations to independently validate the data in the study and basis of the conclusions. Exaggerated statements of health hazard can also be toxic in that they create unwarranted fear and stress which can have real health consequences.

Please let me know if you need anything more.

Scott Sudweeks
CDC/ATSDR Region 8
Denver, CO

From: Elgethun, Kai (ATSDR/DCHI/WB) <irz6@cdc.gov>
Sent: Tuesday, December 3, 2019 3:38:48 PM
To: Sudweeks, Scott D. (ATSDR/DCHI/WB) <zdg1@cdc.gov>; Partridge, Charles <Partridge.Charles@epa.gov>
Subject: Fwd: Manganese, Zinc and Copper and their impact on Human Health in Butte. New Information Reported in today's Montana Standard

From: Wendel, Arthur (ATSDR/DCHI/WB) <dvq6@cdc.gov>
Sent: Monday, December 2, 2019 6:51:09 PM
To: Stokes IV, Shereitte (CDC/DDPHSIS/CSTLTS/OD) <zyz8@cdc.gov>; Elgethun, Kai (ATSDR/DCHI/WB) <irz6@cdc.gov>; Dorian, David (ATSDR/DCHI/WB) <irs1@cdc.gov>; Williamson, Laura (CDC mt.gov) <lwilliamson@mt.gov>; Ferguson, Matthew <Matthew.Ferguson@mt.gov>; Garrett, Connie <Connie.Garrett@mt.gov>
Subject: RE: Manganese, Zinc and Copper and their impact on Human Health in Butte. New Information Reported in today's Montana Standard

Another perspective on this is – why could kids in Columbia, SC potentially be nutritionally deficient? Copper, zinc, and manganese are essential minerals for development.

There does not appear to be much literature on meconium analyses. The McDermott paper references a couple studies that looked at metals (attached), but several in the references were for toxins other than metals. I included a nutritional study (Haram-Mourabet, 2013) that wasn't in the references.

See the table below. The numbers from Butte appear (on my brief read) to be similar to those found in the Haram-Mourabet article. Please review as well (attached) to ensure that I did not foul up the transfer from the article to the below table. I was uncertain whether McDermott is reporting dry weight.

	Measure of central tendency	Cu	Mn	Zn
McDermott 2019 Butte	median	26,000 mcg/kg	5400 mcg/kg	82,000 mcg/kg
MerDermott 2019 Columbia	median	15 mcg/kg	3.3 mcg/kg	43 mcg/kg
Aziz, 2017	Range of towns' means	0-28.7ppm		0-160.3ppm
Arbuckle, 2016	Median		4.9 mcg/g = 4900 mcg/kg	
Haram-Mourabet, 2013 Mean, mcg/g dry weight	Mean (>2500g birthweight)	85.5 mcg/g = 85,500 mcg/kg	32.7 mcg/g = 32,700 mcg/kg	308.2 mcg/g = 308,200mcg/kg

From: Stokes IV, Shereitte (CDC/DDPHSIS/CSTLTS/OD) <zyz8@cdc.gov>
Sent: Monday, December 2, 2019 11:52 AM

To: Elgethun, Kai (ATSDR/DCHI/WB) <irz6@cdc.gov>; Dorian, David (ATSDR/DCHI/WB) <irs1@cdc.gov>; Williamson, Laura (CDC mt.gov) <lwilliamson@mt.gov>; Ferguson, Matthew <Matthew.Ferguson@mt.gov>; Garrett, Connie <Connie.Garrett@mt.gov>

Cc: Wendel, Arthur (ATSDR/DCHI/WB) <dvq6@cdc.gov>

Subject: RE: Manganese, Zinc and Copper and their impact on Human Health in Butte. New Information Reported in today's Montana Standard

Thanks David and Kai. In terms of the follow-up question, I was told the following:

If you have a baseline level of the individual metals in infant blood, then the excess levels in meconium could correlate with those in the blood.

Shereitte C. Stokes IV, PhD, MPH, MIAD

Environmental Health Scientist

Technical Project Officer | Division of Community Health Investigations

Agency for Toxic Substances and Disease Registry

4770 Buford Hwy NE, MS S102-1

Atlanta, GA 30341-3717

O: (404) 498-0376 | ✉: zyz8@cdc.gov

From: Elgethun, Kai (ATSDR/DCHI/WB) <irz6@cdc.gov>

Sent: Monday, December 2, 2019 2:51 PM

To: Dorian, David (ATSDR/DCHI/WB) <irs1@cdc.gov>; Stokes IV, Shereitte (CDC/DDPHSIS/CSTLTS/OD) <zyz8@cdc.gov>; Williamson, Laura (CDC mt.gov) <lwilliamson@mt.gov>; Ferguson, Matthew <Matthew.Ferguson@mt.gov>; Garrett, Connie <Connie.Garrett@mt.gov>

Cc: Wendel, Arthur (ATSDR/DCHI/WB) <dvq6@cdc.gov>

Subject: RE: Manganese, Zinc and Copper and their impact on Human Health in Butte. New Information Reported in today's Montana Standard

My experience with the EI group since 2006 is that they avoid all other matrices, including hair and nail analysis. David is right, the fundamental question is one of plausibility of site-related exposure being a significant contributor.

From: Dorian, David (ATSDR/DCHI/WB) <irs1@cdc.gov>

Sent: Monday, December 2, 2019 12:34 PM

To: Stokes IV, Shereitte (CDC/DDPHSIS/CSTLTS/OD) <zyz8@cdc.gov>; Williamson, Laura (CDC mt.gov) <lwilliamson@mt.gov>; Ferguson, Matthew <Matthew.Ferguson@mt.gov>; Garrett, Connie <Connie.Garrett@mt.gov>

Cc: Elgethun, Kai (ATSDR/DCHI/WB) <irz6@cdc.gov>; Wendel, Arthur (ATSDR/DCHI/WB) <dvq6@cdc.gov>

Subject: RE: Manganese, Zinc and Copper and their impact on Human Health in Butte. New Information Reported in today's Montana Standard

That's still good information. The follow up question then would blood or urine be an effective way to determine if there are unusual exposures to the three metals identified in the meconium study.

On a separate note, the EI basis also would lead us to ask, "is there evidence of a completed exposure pathway for the contaminants identified?" I am not well enough versed in Butte history, but we might start there in our discussion.

From: Stokes IV, Shereitte (CDC/DDPHSIS/CSTLTS/OD) <zyz8@cdc.gov>

Sent: Monday, December 2, 2019 12:26 PM

To: Williamson, Laura (CDC mt.gov) <lwilliamson@mt.gov>; Dorian, David (ATSDR/DCHI/WB) <irs1@cdc.gov>; Ferguson, Matthew <Matthew.Ferguson@mt.gov>; Garrett, Connie <Connie.Garrett@mt.gov>

Cc: Elgethun, Kai (ATSDR/DCHI/WB) <irz6@cdc.gov>; Wendel, Arthur (ATSDR/DCHI/WB) <dvq6@cdc.gov>

Subject: RE: Manganese, Zinc and Copper and their impact on Human Health in Butte. New Information Reported in today's Montana Standard

Good Afternoon David,

I hope this message find you well. I checked with the Exposure Investigations Group, and unfortunately there isn't anyone that has looked at meconium as a measure of exposure. I was told the following:

For our group, if there is not a regulatory or health-based standard, then we generally don't consider the media in our assessment. The only biological media [that has been] considered in ATSDR Health Consultations are blood and urine.

Sorry.

Respectfully,
Shereitte

Shereitte C. Stokes IV, PhD, MPH, MIAD

Environmental Health Scientist

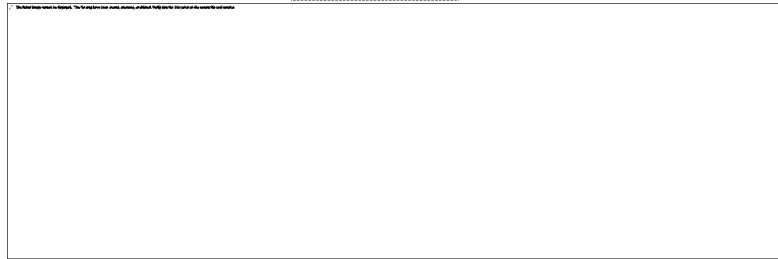
Technical Project Officer | Division of Community Health Investigations

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From: Williamson, Laura <LWilliamson@mt.gov>

Sent: Monday, December 2, 2019 1:58 PM

To: Dorian, David (ATSDR/DCHI/WB) <irs1@cdc.gov>; Ferguson, Matthew <Matthew.Ferguson@mt.gov>; Garrett, Connie <Connie.Garrett@mt.gov>

Cc: Elgethun, Kai (ATSDR/DCHI/WB) <irz6@cdc.gov>; Wendel, Arthur (ATSDR/DCHI/WB) <dvq6@cdc.gov>; Stokes IV, Shereitte (CDC/DDPHSIS/CSTLTS/OD) <zyz8@cdc.gov>

Subject: RE: Manganese, Zinc and Copper and their impact on Human Health in Butte. New Information Reported in today's Montana Standard

Thanks for organizing, David.

Times that work well for the MT team are:

Tuesday- any time after 10 am (except 12:30-1:30)

Wednesday- any time after 10 am

Thursday- any time except 1-2:30

Laura

From: Dorian, David (ATSDR/DCHI/WB) <irs1@cdc.gov>

Sent: Monday, December 2, 2019 11:37 AM

To: Williamson, Laura <LWilliamson@mt.gov>; Ferguson, Matthew <Matthew.Ferguson@mt.gov>; Garrett, Connie <Connie.Garrett@mt.gov>

Cc: Elgethun, Kai (ATSDR/DCHI/WB) <irz6@cdc.gov>; Wendel, Arthur (ATSDR/DCHI/WB) <dvq6@cdc.gov>; Stokes IV, Shereitte (CDC/DDPHSIS/CSTLTS/OD) <zyz8@cdc.gov>

Subject: [EXTERNAL] RE: Manganese, Zinc and Copper and their impact on Human Health in Butte. New Information Reported in today's Montana Standard

Hi Laura, these are excellent questions, and they mirror concerns I had. One additional question would concern developing a control group within Montana. I think a better study design would have been to pick a few locations in Montana and see if any group was statistically different.

Could you all send me some availability times for Tues -Thurs of this week, so I can schedule us to meet (Arthur hoping you will be able to join us).

Shereitte/Kai/Arthur, can you think of someone from the EI group who could offer some insight into meconium as a benchmark for environmental exposure?

Best,
David

From: Williamson, Laura <LWilliamson@mt.gov>

Sent: Monday, December 2, 2019 10:01 AM

To: Dorian, David (ATSDR/DCHI/WB) <irs1@cdc.gov>; Ferguson, Matthew <Matthew.Ferguson@mt.gov>; Garrett, Connie <Connie.Garrett@mt.gov>

Cc: Elgethun, Kai (ATSDR/DCHI/WB) <irz6@cdc.gov>; Stokes IV, Shereitte (CDC/DDPHSIS/CSTLTS/OD) <zyz8@cdc.gov>

Subject: FW: Manganese, Zinc and Copper and their impact on Human Health in Butte. New Information Reported in today's Montana Standard

Hi David and Kai,

I hope you both had a nice thanksgiving with family and friends.

The meconium study is sure making waves in Montana and I think we are all struggling to get our heads around it. What do these results mean? Are they valid? Are there exposure pathways that need to be addressed? Etc.

A member of the Butte Health Study Working group suggested that the LHD "...ask the hospital to provide some additional samples to analyze. This would take a while because it will likely need IRB review, but it doesn't have to be a very large effort (maybe 6-12 samples) just to be able to confirm the magnitude of the concentrations." (see email chain below)

I've got lots of questions about whether this is something state or local public health should do. First, is this a valid (or good use of resources) method for biomonitoring to be repeating? Perhaps validating the results (magnitude) is worth repeating, but what lab has validated methods to do such testing? Should public health consider doing other biomonitoring? Do we know enough yet to make that decision? Are there other avenues we should be considering either in partnership with ATSDR or as a state health department?

Do you have time to discuss sometime this week or next?

Thanks.

Laura

From: Sullivan, Karen <ksullivan@bsb.mt.gov>

Sent: Sunday, December 1, 2019 1:41 PM

To: Williamson, Laura <LWilliamson@mt.gov>

Subject: [EXTERNAL] FW: Manganese, Zinc and Copper and their impact on Human Health in Butte. New Information Reported in today's Montana Standard

Laura: Can we talk further this week about Roz's suggestions? I would really like your input and if possible, assistance – thanks, Karen

From: Rosalind A. Schoof <rschoof@ramboll.com>

Sent: Tuesday, November 26, 2019 4:39 PM

Ex. 6 PP Public Involvement Advisory Group

Subject: RE: Manganese, Zinc and Copper and their impact on Human Health in Butte. New Information Reported in today's Montana Standard



This message did not originate from a Butte-Silver Bow email account and therefore cannot be validated. Please ensure you respond accordingly and proceed with caution.

John,

I agree that this study is very, very preliminary; however, I find the results puzzling rather than alarming. There are no data from Butte that suggest historical mining is a source of exposure to zinc, manganese and copper at the magnitude suggested by this study.

The first step I recommend would be to ask Katie to let us have someone review and QC her data, and also ask if she has remaining split samples that EPA could have analyzed.

The second step I recommend is to have the health department ask the hospital to provide some additional samples to analyze. This would take a while because it will likely need IRB review, but it doesn't have to be a very large effort (maybe 6-12 samples) just to be able to confirm the magnitude of the concentrations.

Only once the levels reported in the new paper are confirmed by an independent laboratory would I recommend a more detailed study (that would include more information on the participants and possible sources).

We can add this to our agenda for our call on December 9th.

Regards,
Roz

Rosalind A. Schoof

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From: John Ray | **Ex. 6 Personal Privacy (PP)**

Sent: Tuesday, November 26, 2019 4:54 AM

Ex. 6 PP Public Involvement Advisory Group

Subject: Manganese, Zinc and Copper and their impact on Human Health in Butte. New Information Reported in today's Montana Standard

While I realize that the Hailer and McDermott study on zinc, manganese and copper that was reported in today's Montana Standard is very, very, very preliminary, it was shocking to me and should be shocking to all who are interested in Butte's public health to read about the levels of copper, manganese and zinc in infants. While this is a very preliminary pre-study, it does raise concerns.

Interest in these three toxics has been pretty much confined, at best, to the effect on aquatic life, not humans. Arsenic, lead and mercury have driven the human health aspect of the cleanup. Zinc, manganese and copper have flown pretty much under the health radar when it comes to Superfund in Butte.

To point, the following questions are pertinent:

1. How can the current cleanup plans be amended to include **consideration** of these three toxics? Do they need to be amended? The consent decree is nearing completion. While we don't know where these individuals reported in the study lived, they may well have lived in the BPSOU operable unit. If so, these toxics should be considered. Also, if some lived in "The Flat," the Westside Soils RI/FS process which is occurring at present should investigate copper, zinc and manganese in the Flat. Failure to do the above would be a serious lapse in protecting public health.

2. How can active mining be considered in the equation? It is difficult if not impossible to distinguish the results of active mining versus historic mining. But that doesn't lessen the obligation to protect public health. There perhaps needs to be greater attention paid to the environmental effects of active mining, which is largely in the purview of MDEQ. MDEQ has not distinguished itself in this regard. Nevertheless, given the potential effect on the efficacy of the Superfund cleanup of active mining, EPA needs to be actively involved. For example, how many of these people came from the Greeley neighborhood? We don't know but EPA and MDEQ should pay particular attention to that area. There are obviously environmental justice concerns here. How will those be addressed?

3. How are citizens to make sense out of the conflicting array of health studies that have been released in the past few years? Currently, there are a confusing plethora of health studies all providing partial and contradictory answers to whether or not Butte is a safe place to live and work. These need to be analyzed and synthesized so that some kind of answer can be given as to whether or not Butte is safe when it comes to environmental toxics, whether from historic mining or active mining.

4. What can be done to address zinc, manganese and copper? They pose a threat to human health, Superfund is supposed to ameliorate such treats, so what will EPA and MDEQ do? Do we need a ROD amendment for BPSOU? Do we need an aggressive public education campaign?

I realize all of this is very preliminary. There is no need for panic. This was not a full blown study. But it raises alarm bells. **We need to get out in front of this. We need to be proactive.** If we don't respond, the public perception will be that there is a significant issue here. There may be. We need to take the lead on this or the situation will be defined for us and perhaps not in the way we would want. In any event, this is a potentially significant public health issue related to Superfund and needs consideration. We should not just dismiss this information.

Dr. John W. Ray

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